



PMRA Scientific Methods Series (*Part I*)

Call Playback Survey Methods for Coastal Western
Screech-Owl (*Megascops kennicottii kennicottii*)

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Introduction

The Pacific Megascops Research Alliance (PMRA) was established in February of 2021 to fulfil several directives related to Coastal Western Screech-Owls (WESOke; *Megascops kennicottii kennicottii*). The mission of the PMRA is to *encourage and foster collaboration between future, present and past coastal BC nocturnal wildlife researchers, and to provide outreach and engagement to the public, using Western Screech-Owls as our umbrella organism*. To do this, the organization set several goals, the first of which was to *develop scientifically defensible Western Screech-Owl survey protocols for a) playback and b) remote sensing surveys and to make sure that these are easily accessible to the public and free through the PMRA website*.

Over the last fifty years WESOke research has been conducted in BC using an array of different survey methodologies. The BC Nocturnal Owl Survey Protocol, developed and run by Birds Canada, and the Resource Information Standards Committee (RISC) protocol, developed for the BC Ministry of Environment, were the two standard protocols used by most of the surveys completed in BC up until 2021. Our protocol is compatible with both of these methodologies.

Methods

Transects and Stations

Each survey is composed of a linear transect, usually along a road or path. Each transect should be spaced at least 5km from any previously existing transect. Within a transect, there are between 10 and 20 point count stations. These stations are spaced 800m from one another, using a straight-line measurement. This is important, as playback should not be presented to birds at subsequent stations prior to visiting that station. Stations should be visited at least 3 times in a season, but ideally 4-5 times. Visits should be spaced out as well as possible, but should only take place between February 1st and April 31st.

Station order, within the transect, should be mixed up as much as possible. Completing the surveys in different directions on different visits (ie from point 1 – 8 on visit 1, and point 8 – 1 on visit 2) is the easiest way to do this.

Nightly timing

Playback can be completed starting ***a half hour after sunset*** until an hour before sunrise. Because WESO vocal activity tends to peak soon after sunset (1 – 2 hours) ideally the survey should start a half hour after sunset.

Station order, within the transect, should be mixed up as much as possible. Completing the surveys in different directions on different visits (ie from point 1 – 8 on visit 1, and point 8 – 1 on visit 2) is the easiest way to do this. This way points are visited at different times relative to peak vocal activity.

Call Playback

The only recording being presented during these surveys should be your regionally-specific audio recording found on the PMRA website. ***Do not present other recordings during these surveys unless written into the protocol.*** If your project requires that you locate nests using other playback when you detect an owl, we request that you return at another date to do this. Playback should be presented at 70-75db. See the instructional section of the PMRA website for more details on how to test the volume of your playback device. If your audio device is directional, then make sure to present a full vocalization in each cardinal direction during each minute-long playback.

The playback recordings found on the website are timed to present playback for a complete survey. The time frame within the survey and the method for that time frame (silent or playback) is listed in the datasheet. The 17-minute survey is composed of the following:

- a) 2-minute silent listening period
- b) 1-minute playback
- c) 4-minute silent listening period
- d) 1-minute playback
- e) 4-minute silent listening period
- f) 1-minute playback
- g) 4-minute silent listening period

You can start your 2-minute silent listening period as soon as all car doors are finished closing, lights are turned off and everyone present is silent and has begun listening. In cases where you may be concerned about bears, wolves, moose, elk or puma approaching you in the dark, you may keep a low light or red light headlamp beam on. If you are on the side of a road with traffic, make sure you have reflective gear so that passing cars are aware of your presence.

Body and Vehicle Positioning

When presenting the playback make sure that it is not being masked by yourself, other observers, or your vehicle. Along the same thread, make sure your hearing is not masked by these same obstacles. Moving away from the car (by 10-20 feet) to reduce sound masking is a good idea. At the very least, ***the vehicle should be turned off (prior to the start of the survey) and you should be outside of the vehicle for the duration of the survey.***

Post-survey Scanning

Once the survey is completed, use a flashlight or headlamp to slowly turn in a circle and scan the surrounding trees for any owls that may have silently approached. If you detect an owl this way, that you have not detected during the survey, there should be no *time of first detection*, but please make sure to make a note in the *observation notes* section that this was seen while scanning and use the code **S** in the *vocalization type* section. **Lights should not be used during the survey except at very low level to help with writing down observations.**

After Detecting an Owl

When you detect an owl of any species we request that you complete the survey in its entirety.

This includes all remaining playbacks and listening periods. In the case that you are not comfortable doing so, please note the *'Minute playback stopped'* as minute within the survey period (1-17). Make sure you document if, when and why the playback was stopped during the survey in the *'observation notes'* section. If you do stop the playback, make sure that you continue listening until the end of the 17 minute period is complete.

Data collection

Transect and visit information can be written down on the first sheet used on that transect on that night. This sheet should then be stapled to the other sheets from that same transect visit so that you don't need to write down date, transect, visit number etc, for every data sheet. All sheets should also be photographed well enough to be able to read the information on them, after every transect visit. Data can be shared either physically or electronically, but there should always be an electronic backup of the data on hand.

Transect data

Date should include day, month (in letters) and year. **Region/transect** is left vague for project-specific use, but should have both the transect ID and the region ID written clearly. **Visit** is the visit number from that year. If that is the first visit of the year to that transect you should write 1, if it is the second visit you should write 2. If you return to complete a survey transect on a subsequent night, that is still the first visit unless you are repeating survey points again. **Protocol and project** should clearly and briefly reference changes to standard PMRA protocol being used and name the project. Standard project is *PMRA Volunteer*.

Station data

Station is the number of the station being visited within the transect. **Time start** is the time on the 24 hour clock when the 2min silent listening period starts at the beginning of the survey. All weather metrics are described in the associated datasheet definitions document. All **Observers** should be named on the first sheet (full name) and 3-letter codes for all observers present for

the station should be listed in the Observers section. Making sure that these codes are complete and distinct is important, because this will be used to count the number of observers at each station. **Station notes** can include, but are not limited to, sources of noise, issues with count etc.

Observation data

There should be one line per individual owl detected on each survey station. For example, if you detect 3 Western Screech-Owls and 1 Barred Owl, there should be a total of 4 rows, each describing the owl detections for each individual through the survey.

If you are unsure of species, sex or vocalization types, write unknown or U and take an audio recording as best you can. We will review this at a later date. **Species** should be the 4-letter code for the species details on the associated definitions sheet. **Sex** should identify whether or not the owl is male or female or juvenile. The codes for sex are *M* for Male, *F* for Female, *U* for Unknown, *J* for Juvenile. **Minute of first detection** is the time at which you first detected an individual on a survey starting from 0 at the start of the survey and ending at 17 at the end. If you detect an owl 10 seconds into the survey, time of first detection should read 0, or at 1:30 into survey, it should read 1. **Direction of first detection** is the direction in which the individual was first detected. This is simply the cardinal directions eg. *N, NNW, W, SW, S, ESE*

The **Distance estimations** are likely the most complicated parts of your survey. These should all be between 1 and 5. They are between 1 and 5 because these represent different distance bins (Table 1 below). If you can't remember the distance bin codes you can write down your distance estimation and translate it into a bin after the survey.

Table 1: Distance bins

Bin ID	Distance (m)
1	0-50
2	50-100
3	100-200
4	200-400
5	400+

Each section for you to write your estimates in, corresponds with a different time frame in the survey, and each time frame is labeled with the call playback activity. For example the first two minutes in the survey are silent listening and are therefore labeled 0-2 min *Silent*. The first time you detect an individual in any of these frames, you should write the distance bin that you think this owl is from where you are standing. For example, if you detect an owl 7 minutes and 30 seconds into the survey, and you think that it's 100 – 130 m away, you would write 3 in the 7-8 min *Playback* section of your sheet. If this is the first time you detected this individual you should not write anything in the frames prior to it. If you continue to detect this individual, you should write how far away it is when you detect it in the subsequent frames. For example, if you detect

it again at 12:20 and it has moved to about 20-30 m away, you should write 1 in the 12-13 min section of the sheet for that individual. If it moves closer within that frame, don't change the distance estimation for that time frame. The distance is an estimate of how far away it is when you first detect it within that time frame. If you are unclear about this, then please see our *how to* videos on the volunteer survey page of the PMRA website.

Vocal activity is represented by a one letter code to distinguish between vocal and visual detections. Courtship

Table 2: Breeding evidence codes from vocalizations heard during survey

Evidence Code	Definition
H	Heard vocalizing at any point in the survey
S	Seen only
C	Courtship display (counter singing between male and female or copulation display vocalizations)

There are a number of vocalizations that each owl species can make. Please familiarize yourself with the more common ones from each of the common species listed on the survey reminder sheet, before completing a survey.